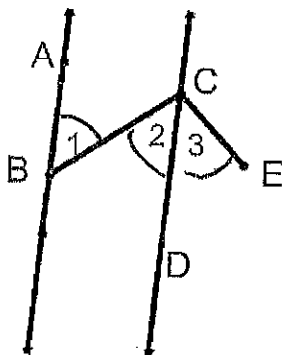


Name Key

Date _____

201 Parallel Line Proofs—worksheet 1

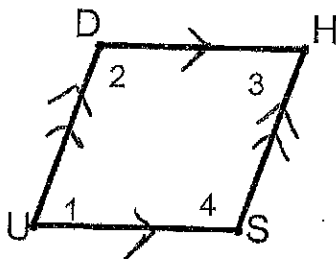
1. Given: $\overline{AB} \parallel \overline{CD}$
 \overline{CD} bisects $\angle BCE$
 Prove: $\angle 1 \cong \angle 3$



Statements	Reasons
① ~	① Given
② $\angle 1 \cong \angle 2$	② Alt. Int. \angle s Thm
③ $\angle 2 \cong \angle 3$	③ Def. of Bis
④ $\angle 1 \cong \angle 3$	④ transitive

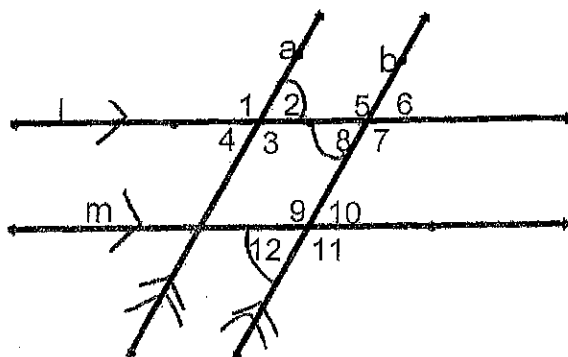
2. Given: $\overline{UD} \parallel \overline{HS}$

$\overline{DH} \parallel \overline{US}$
 Prove: $\angle 1 \cong \angle 3$



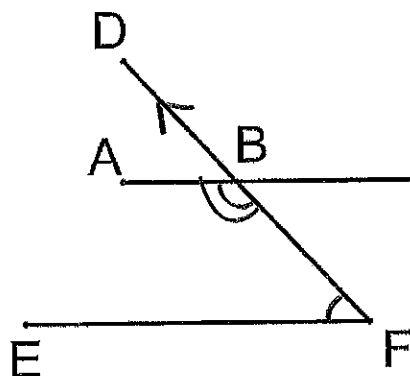
Statements	Reasons
① ~	① Given
② $\angle 1 + \angle 2$ are suppl $\angle 3 + \angle 4$ are suppl	② Cons. Int. \angle s thm
③ $\angle 1 \cong \angle 3$	③ \cong Suppl. Thm

3. Given: $a \parallel b$; $l \parallel m$
 Prove: $\angle 2 \cong \angle 12$



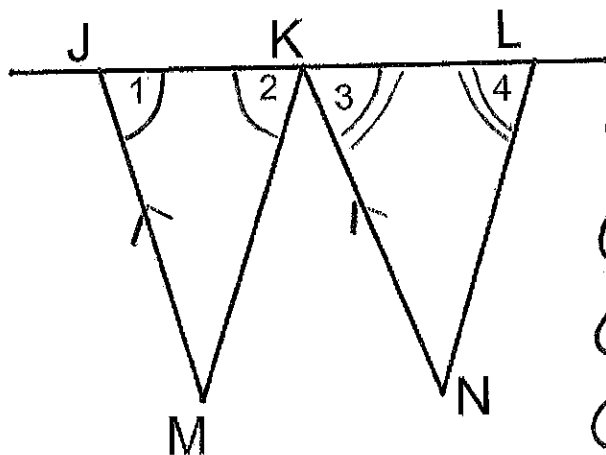
Statements	Reasons
① ~	① Given
② $\angle 2 \cong \angle 8$	② Alt. Int. \angle s Thm
③ $\angle 8 \cong \angle 12$	③ Corr. \angle s Post.
④ $\angle 2 \cong \angle 12$	④ transitive

- Given: $\overline{FD} \parallel \overline{CG}$; $\angle F$ and $\angle C$ are supplementary
 4. Prove: $\overline{CA} \parallel \overline{FE}$



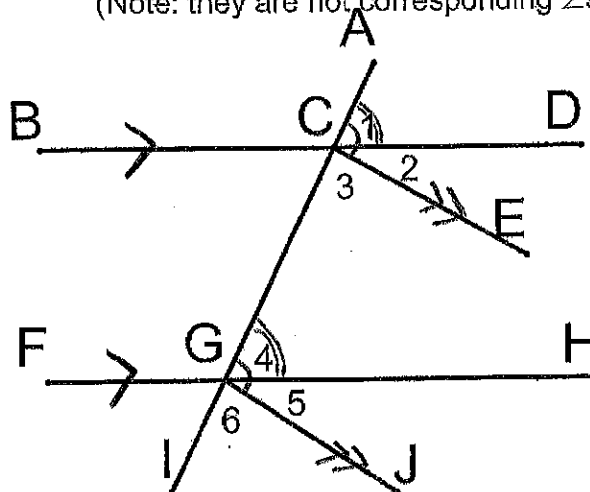
Statement	Reasons
① \sim	① Given
② $\angle C \cong \angle ABF$	② Corr \angle s Post.
③ $m\angle F + m\angle C = 180$	③ def of suppl.
④ $m\angle C = m\angle ABF$	④ def of \cong
⑤ $m\angle F + m\angle ABF = 180$	⑤ Subst
⑥ $\angle F + \angle ABF$ are suppl	⑥ def of suppl.
⑦ $\overline{CA} \parallel \overline{FE}$	⑦ Cons. Int \angle Conv.

5. Given: $\overline{JM} \parallel \overline{KN}$; $\angle 1 \cong \angle 2$; $\angle 3 \cong \angle 4$
 Prove: $\overline{KM} \parallel \overline{LN}$



Statements	Reasons
① $\angle 1 \cong \angle 2$ $\angle 3 \cong \angle 4$	① Given
② $\angle 1 \cong \angle 3$	② Corr \angle s Post.
③ $m\angle 1 = m\angle 2$, $m\angle 3 = m\angle 4$ $m\angle 1 = m\angle 3$	③ def of \cong
④ $m\angle 2 = m\angle 4$	④ Subst
⑤ $\angle 2 \cong \angle 4$	⑤ def of \cong
⑥ $\overline{KM} \parallel \overline{LN}$	⑥ Corr \angle s Conv.

6. Given: $\overline{BD} \parallel \overline{FH}$ and $\overline{CE} \parallel \overline{GJ}$
 Prove: $\angle 2 \cong \angle 5$
 (Note: they are not corresponding \angle s)

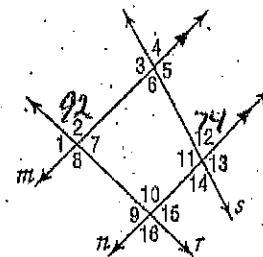


Statements	Reasons
① \sim	① Given
② $\angle ACE \cong \angle CGJ$	② Corr \angle s Post
③ $\angle 1 \cong \angle 4$	③ Corr \angle s Post
④ $m\angle ACE = m\angle CGJ$ $m\angle 1 = m\angle 4$	④ def of \cong
⑤ $m\angle ACE = m\angle 1 + m\angle 2$ $m\angle CGJ = m\angle 4 + m\angle 5$	⑤ AAP
⑥ $m\angle 1 + m\angle 2 = m\angle 4 + m\angle 5$	⑥ Subst
⑦ $m\angle 2 = m\angle 5$	⑦ Subtr
⑧ $\angle 2 \cong \angle 5$	⑧ def of \cong

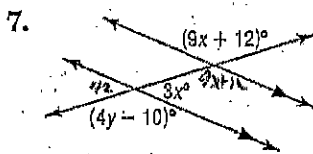
3-2 Practice Angles and Parallel Lines

In the figure, $m\angle 2 = 92$ and $m\angle 12 = 74$. Find the measure of each angle.

- | | | | |
|----------------|-----|----------------|-----|
| 1. $\angle 10$ | 92 | 2. $\angle 8$ | 92 |
| 3. $\angle 9$ | 88 | 4. $\angle 5$ | 106 |
| 5. $\angle 11$ | 106 | 6. $\angle 13$ | 106 |



Find x and y in each figure.



$$3x + 9x + 12 = 180$$

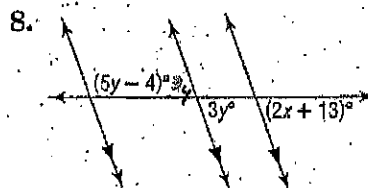
$$12x = 168$$

$$x = 14$$

$$4y - 10 = 138$$

$$4y = 148$$

$$y = 37$$



$$2x + 13 = 69$$

$$2x = 56$$

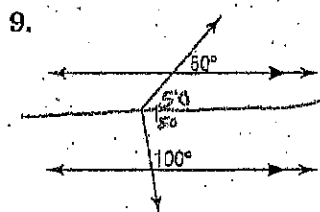
$$x = 28$$

$$5y - 4 + 3y = 180$$

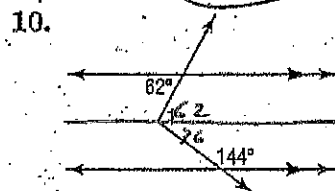
$$8y = 184$$

$$y = 23$$

Find $m\angle 1$ in each figure.



$$m\angle 1 = 130^\circ$$

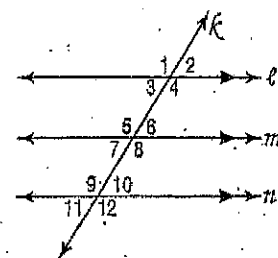


$$m\angle 1 = 98^\circ$$

~~11. PROOF~~ Write a paragraph proof of Theorem 3.3.

Given: $\ell \parallel m, m \parallel n$

Prove: $\angle 1 \cong \angle 12$



~~12. FENCING~~ A diagonal brace strengthens the wire fence and prevents it from sagging. The brace makes a 50° angle with the wire as shown. Find y .

